

(No Model.)

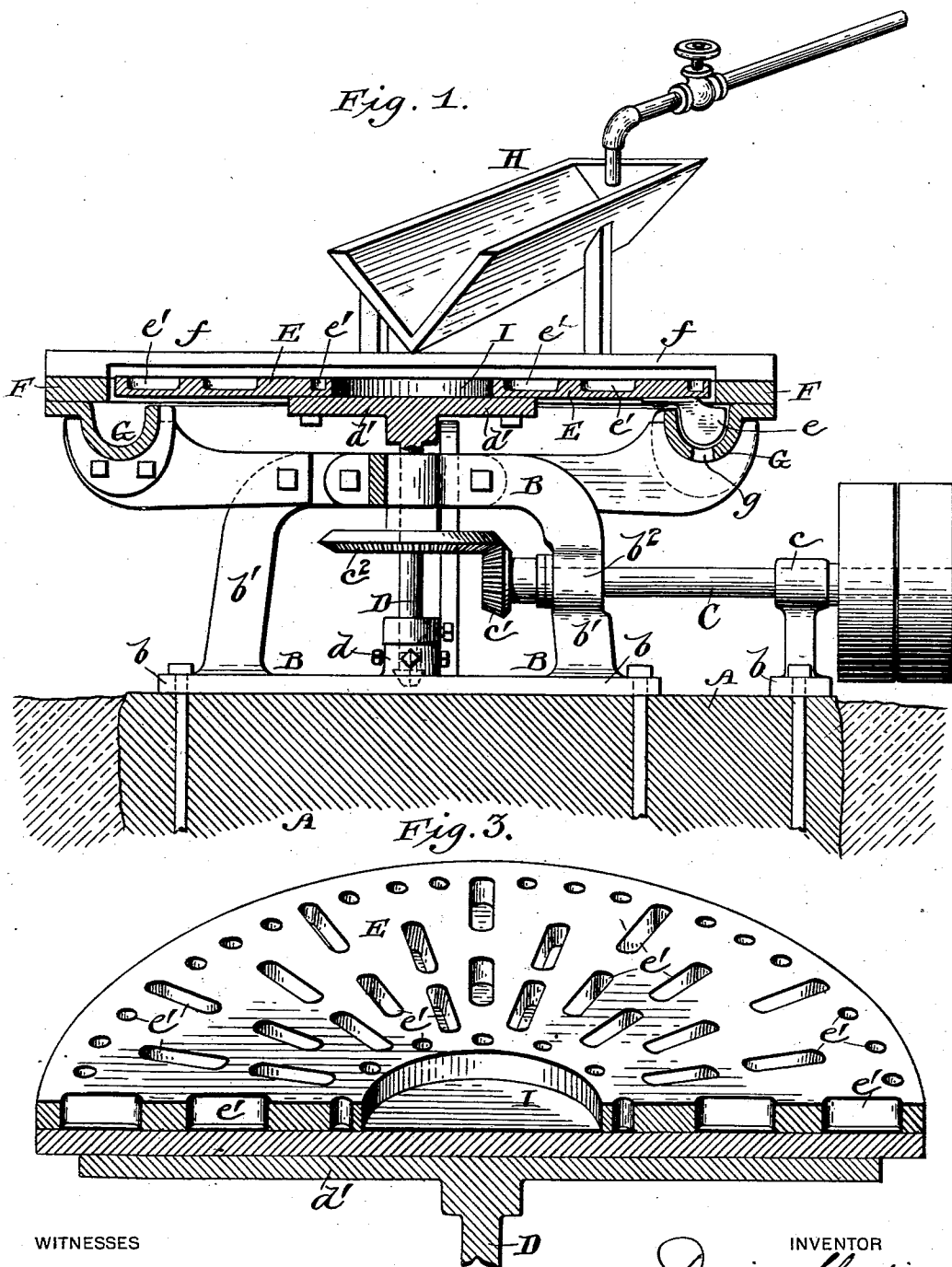
2 Sheets—Sheet 1.

D. SHORTSLEEVE.

STONE WORKING MACHINERY AND RUBBING BED PLATE THEREFOR.

No. 563,081.

Patented June 30, 1896.



WITNESSES

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INVENTOR

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(No Model.)

2 Sheets—Sheet 2.

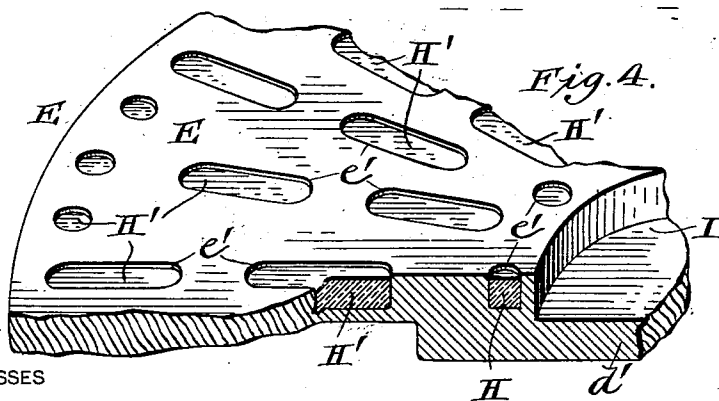
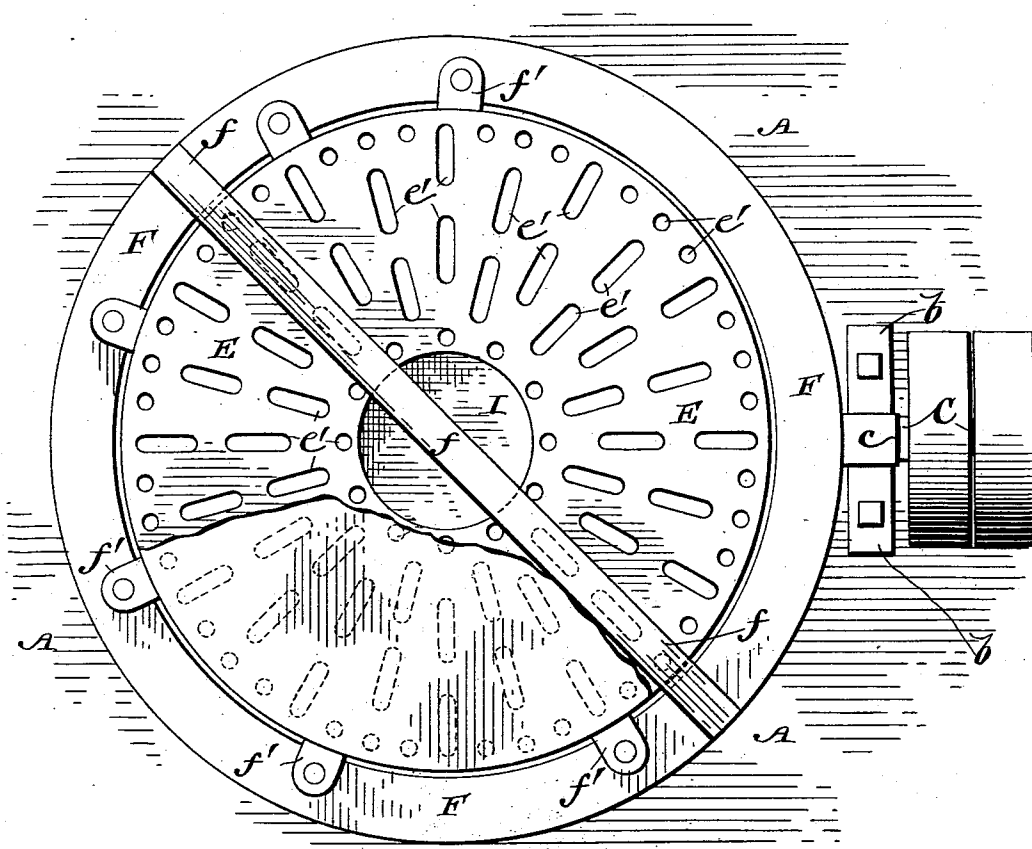
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Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

DAVID SHORTSLEEVE, OF RUTLAND, VERMONT, ASSIGNOR OF ONE-HALF TO
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STONE-WORKING MACHINERY AND RUBBING BED-PLATE THEREFOR.

SPECIFICATION forming part of Letters Patent No. 563,081, dated June 30, 1896.

Application filed March 5, 1896. Serial No. 582,010. (No model.)

To all whom it may concern:

Be it known that I, DAVID SHORTSLEEVE, a citizen of the United States, residing at Rutland, in the county of Rutland and State of Vermont, have invented certain new and useful Improvements in Stone-Working Machinery and Rubbing Bed-Plates Therefor; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to machines for rubbing and diminishing stone, and has to do more particularly with rubbing bed-plates for diminishing or rubbing stone to a condition suitable for polishing; and it consists, first, of a rubbing bed-plate provided on its upper surface with a number of spaced pockets or recesses adapted for receiving, holding, and conveying water and abrasing material, such as sand, emery, chilled iron, crushed steel, and the like beneath the stone being operated upon, said pockets having closed bottoms and terminating inside of the periphery of the rubbing bed-plate.

The invention consists, secondly, of a rubbing bed-plate provided on its upper surface with a series of radially-arranged short-spaced pockets or recesses adapted to receive and hold water and abrasing material, said pockets having closed bottoms, the upper ends or edges of one series of pockets terminating at points slightly beyond the commencement of the inner edge of another series of pockets or recesses.

The invention consists, thirdly, of a rubbing bed-plate provided on its upper surface with a number of pockets or recesses adapted to receive and hold water and abrasing material, said pockets having closed bottoms and terminating inside of the periphery of the rubbing bed-plate, the pockets or recesses being comparatively deep and nearly filled with wood, lead, or other suitable solid material of less hardness than that of which the rubbing bed-plate is constructed.

It also consists of certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 is a vertical section through the rubbing-bed and its connections. Fig. 2 is a top view of the machine. Fig. 3 is a perspective view, partly in section, of a portion of the rubbing bed-plate, showing the plate constructed in two parts; and Fig. 4 is a perspective view, partly in section, of a portion of the rubbing bed-plate, the same being made in one piece and the pockets or recesses provided with a filling.

A in the drawings represents a suitable foundation of stone or other material upon which an open supporting-frame B, having radial arms *b b* and legs *b' b'*, is rigidly secured. A horizontally-arranged shaft C, supported in a bearing *c*, is passed through a bearing *b²*, formed in one of the legs *b'*. The outer end of the shaft C is provided with suitable pulleys of ordinary construction, and the inner end of said shaft is provided with a pinion *c'*, which latter meshes with a bevel-gear *c²*, carried by a vertical shaft D. This vertical shaft rests at its lower end in a stop-box *d* and has secured to it at its upper end an attaching spider-plate *d'*, to which the rubbing bed-plate E is attached.

The rubbing bed-plate is inclosed at its peripheral edge by a curbing F, within which the rubbing bed-plate revolves, the upper surface of the rubbing bed-plate extending slightly higher than the upper surface of the curbing. This is of importance, as it permits the stone to rest squarely upon the rubbing bed-plate without coming in contact with the curbing. The upper peripheral edge of the rubbing bed-plate is made flat, that is, without an upwardly-projecting flange, which is a preferable construction to a rubbing bed-plate formed with such a flange, as with my rubbing bed-plate the water and abrasing material are free to pass over the upper peripheral edge of the plate and be discharged therefrom, which would not be the case if a flange were provided.

To the under side of the curbing F a trough G is secured which extends beneath the rubbing bed-plate beyond its outer edge, so as to receive the waste abrasing material and water which discharges over the upper peripheral edge of the rubbing bed-plate.

The rubbing bed-plate E is provided on its under side near its outer edge with a scraper *e*, which works in the trough as the plate revolves and carries the waste water and abrading material around to an opening *g* in the bottom of the trough, through which the water and abrading material are discharged. A horizontal cross-bar *f* extends over the top of the rubbing bed-plate and is secured rigidly at its outer ends to the curbing or other suitable place. This cross-bar is designed to prevent the stone being operated upon from being carried around by the rubbing bed-plate. Auxiliary holding means *f' f'* may also be provided, if desired, for securing the stone in position. Any number of bars may be employed and several stones be operated upon at the same time.

My improved rubbing bed-plate is preferably circular in form and constructed of metal, and is provided on its upper surface with pockets or recesses *e' e'*, which may be square, oblong, round, or of any other suitable shape. These pockets or recesses are formed in the plate by coring or in any other suitable manner. The rubbing bed-plate may be constructed in one piece, as shown in Fig. 4, or it may be constructed of two horizontal plates, as shown in Fig. 3, and the two plates suitably secured together. In this latter construction the pockets or recesses would preferably extend entirely through the top plate, and the bottom of the pockets would be formed by the upper surface of the lower plate. This latter construction will be found very convenient for use in replacing old rubbing bed-plates, as these top plates can be readily applied to old machines now in use at comparatively slight cost, and a rubbing-bed thereby secured which will be as efficient as an entirely new machine. These top rubbing bed-plates can be readily applied to old or worn-out rubbing bed-plates, as such plates as are now in general use are perfectly smooth on their upper surfaces. The pockets or recesses, whether constructed as shown in Fig. 3 or as in Fig. 4, are made of such a depth that the rubbing bed-plate will last a considerable length of time.

In operating my machine the abrading material and water are fed from a suitable source of supply H, as shown, to a point about the center of the rubbing bed-plate, and a rotary movement of said plate carries the water and abrading material by centrifugal force, first to the inner pockets and fills the same, and then to the other pockets until they are all filled. The grinding action of the stone upon the abrading material in the pockets draws the said material out of the pockets and it is carried by centrifugal force over the outer edge or periphery of the rubbing bed-plate, and other abrading material is fed or forced into the pockets to take the place of the displaced or worn abrasive material. This action is kept up continuously during the operation of the machine.

While it might be practical to depend upon the abrading material to fill the pockets or recesses, to avoid any liability of the stone being chipped or broken by gravel or other substance lodging in and being held by the pockets or recesses, I prefer to partly fill the pockets or recesses with a substance such as wood, lead, or other suitable material, as H', which is of less hardness than the material of which the rubbing bed-plate is constructed. My object in using a material of this character is that it will not only partially fill the pockets or recesses and leave a seat for the lodgment of the abrading material to be fed beneath the stone, but will avoid deep depressions for catching gravel and the like, and will also wear down as the rubbing bed-plate is reduced in thickness by the wearing action of the stone.

It will be observed that I have shown the pockets or recesses arranged radially in six series or circles, as 1, 2, 3, 4, 5, and 6, the pockets or recesses of one series coming between the pockets or recesses of an outer series, and the outer ends or edges of an inner series extending to or slightly beyond the inner ends or edges of an outer series. The object and advantage of this peculiar arrangement and construction are that a continuous broken water and abrading feeding-surface is secured over the entire surface of the rubbing bed-plate, so that the stone will be rubbed equally and evenly over its entire surface.

It will be observed that the pockets or recesses do not extend to the outer periphery of the plate, as stated heretofore, and I wish to cover by my invention a bed-plate constructed with recesses or pockets which terminate inside of the periphery of the rubbing bed-plate whether such pockets or recesses are constructed with spaces between them, as shown, or whether they extend in continuous radial lines to points inside of the periphery. The advantages of this construction have been heretofore set forth.

A well or depression I may be formed in the center of the rubbing bed-plate, as shown, for receiving the water and abrading material, but I do not wish to limit my invention to this construction.

I have described my rubbing bed-plate as being made in one piece or in two horizontal sections. It may be practical to construct the upper and lower plate or the entire rubbing bed-plate, when a single plate is employed, in several radial sections, and suitably unite the parts.

While I have particularly described a practical frame or support for my improved revolving stone-reducing plate or disk having pockets or recesses in its face and also gearing for operating the same, I wish it to be distinctly understood that I do not confine my invention to the particular frame and gearing described and shown, as I contemplate employing said reducing-plate, with pockets or

recesses, in any suitable frame or support and with any suitable driving-gearing.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A metal rubbing bed-plate provided on its upper surface with comparatively deep spaced pockets or recesses, and partially filled with a solid material as wood which is of less hardness and wearing durability than the metal of which the plate is constructed, whereby the filling will wear down faster than the metal of the rubbing bed-plate and form shallow pockets for the reception of abrasing material, substantially as described.

2. A metal rubbing bed-plate constructed of two horizontal sections secured together one above the other, the upper section provided with pockets or recesses which extend entirely through said section and are closed at their bottoms by the upper surface of the under plate, substantially as described.

3. A metal rubbing bed-plate constructed of two horizontal sections secured together one above the other, the upper section provided with pockets or recesses, said pockets being filled with a suitable solid material as wood which is of less hardness than that of which the rubbing bed-plate is constructed, substantially as described.

4. A metal rubbing bed-plate provided on its upper surface with spaced pockets or recesses arranged in series or circles, the pockets or recesses of one series arranged intermediate the pockets or recesses of an outer series, and the outer ends or edges of an inner series of pockets extending to or slightly beyond the inner ends or edges of an outer series of pockets, substantially as described.

5. In a stone-working machine, the com-

bination with a suitable supporting-bed, of a rotary rubbing bed-plate provided on its upper surface with recesses or pockets having closed bottoms all of which pockets fall within the periphery of said plate, the plate being smooth on its upper surface at its peripheral edge, a curbing inclosing the rubbing bed-plate with a vertical space between the rubbing bed-plate and said curbing which permits the waste water and abrasing material to pass through said space, and means for imparting a rotary movement to the rubbing bed-plate, substantially as described.

6. A metal rubbing bed-plate provided on its upper surface with comparatively short, radially-arranged, spaced pockets or recesses having closed bottoms, the outer ends or edges of one series of pockets extending to or slightly beyond the commencement of the inner edges of another series of pockets or recesses, substantially as described.

7. A metal rubbing bed-plate constructed of two horizontal sections secured together one above the other, the upper section being provided with comparatively short, spaced pockets or recesses which extend entirely through said section and are closed at their bottoms by the upper surface of the under section or plate, the outer ends or edges of an inner series of pockets extending to or slightly beyond the inner ends or edges of an outer series of pockets, substantially as described.

In testimony whereof I hereunto affix my signature in presence of two witnesses.

DAVID SHORTSLEEVE.

Witnesses:

E. T. FENWICK,
N. S. HOCKMAN.